

July 2022

Labor Market Analysis

Advanced Welding, Intermediate Welding, and Welding Essentials



POWERED BY



Prepared by the Central Valley/Mother Lode Center of Excellence

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COVID-19 Statement: This report includes employment projection data by Emsi. Emsi’s projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy during the projection period will be at approximately full employment or potential output. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, they may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Other measures such as unemployment rates and monthly industry employment estimates will reflect the most recent information on employment and jobs in the state and, in combination with input from local employers, may help validate current and future employment needs as depicted here.

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Summary

Please note the COVID-19 statement on page 2 when considering this report's findings.

This study conducted by the Central Valley/Mother Lode Center of Excellence examines labor market demand, wages, skills, and postsecondary supply for Advanced Welding, Intermediate Welding, and Welding Essentials. Two occupations related to Advanced Welding, Intermediate Welding, and Welding Essentials were identified for Reedley College:

- 51-4121, Welders, Cutters, Solderers, and Brazers
- 51-4122, Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders

Key findings:

- **Occupational demand** — Nearly 3,070 workers were employed in jobs related to Advanced Welding, Intermediate Welding, and Welding Essentials in 2021 in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. The largest occupation is welders, cutters, solderers, and brazers with 3,003 workers, a projected growth rate of 1% over the next five years, and 336 annual openings.
- **Wages** — Welding, soldering, and brazing machine setters, operators, and tenders earn the highest entry-level wage, \$17.56/hour in the subregion.
- **Employers** — Employers with the most job postings in the subregion are Pacific Gas and Electric Company, Oldcastle Precast Incorporated, and Baltimore Aircoil Company.
- **Occupational titles** — The most common occupational title in job postings in the subregion is Welders, Cutters, and Welder Fitters. The most common job title is Welder.
- **Skills and certifications** — The top baseline skill is physical abilities, the top specialized skill is welding, and the top software skill is Microsoft Office. The most in-demand certification is a welding certification.
- **Education** — A high school diploma or equivalent is typically required for the two occupations.
- **Supply** — Analysis of postsecondary completions shows that on average 393 awards were conferred in the Central Valley/Mother Lode region each year.

Based on a comparison of occupational demand and supply, there is an undersupply of 139 trained workers in the subregion and 188 workers in the region. The Center of Excellence recommends that Reedley College work with the regional directors, the college's advisory board, and local industry in the expansion of programs to address the shortage of Advanced Welding, Intermediate Welding, and Welding Essentials workers in the region.

Introduction

The Central Valley/Mother Lode Center of Excellence was asked by Reedley College to provide labor market information for Advanced Welding, Intermediate Welding, and Welding Essentials. The geographical focus for this report is the South Central Valley/Southern Mother Lode (SCV/SML) subregion, but regional demand and supply data has been included for broader applicability and use. The average living wage for a single adult in the SCV/SML subregion is \$11.91/hour.¹ Analysis of the program and occupational data related to Advanced Welding, Intermediate Welding, and Welding Essentials resulted in the identification of applicable occupations. The Standard Occupational Classification (SOC) System codes and titles used in this report are:

- 51-4121, Welders, Cutters, Solderers, and Brazers
- 51-4122, Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders

The occupational titles, job descriptions, sample job titles, and knowledge and skills from the Bureau of Labor Statistics and O*NET OnLine are shown below.

Welders, Cutters, Solderers, and Brazers

Job Description: Use hand-welding, flame-cutting, hand-soldering, or brazing equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.

Knowledge: Production and Processing

Skills: N/A

Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders

Job Description: Set up, operate, or tend welding, soldering, or brazing machines or robots that weld, braze, solder, or heat treat metal products, components, or assemblies. Includes workers who operate laser cutters or laser-beam machines.

Knowledge: Mathematics

Skills: Operations Monitoring, Active Listening, Critical Thinking, Operation and Control, Speaking

Occupational Demand

The SCV/SML subregion employed 3,060 workers in Advanced Welding, Intermediate Welding, and Welding Essentials occupations in 2021 (Exhibit 1). The largest occupation is welders, cutters, solderers, and brazers with 3,003 workers. This occupation is projected to grow by 1% over the next five years and has the greatest number of projected annual openings, 336.

Exhibit 1. Advanced Welding, Intermediate Welding, and Welding Essentials employment and occupational projections in the SCV/SML subregion

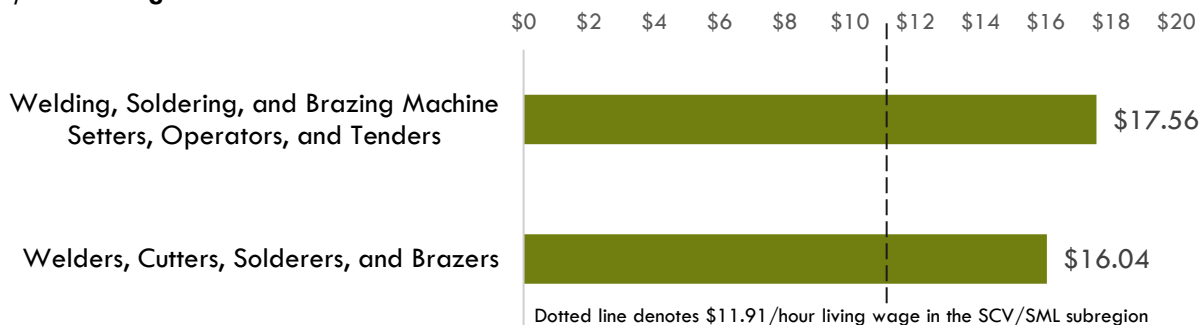
Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings
Welders, Cutters, Solderers, and Brazers	3,003	3,048	45	1%	336
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	66	69	3	4%	8
TOTAL	3,069	3,117	48	2%	345

¹ The term "living wage" in Center of Excellence reports is calculated by averaging the self-sufficiency wages from the Insight Center's California Family Needs Calculator for each county in the subregion: <https://insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

Wages

Exhibit 2 shows the entry-level hourly wages of the Advanced Welding, Intermediate Welding, and Welding Essentials occupations. Welding, soldering, and brazing machine setters, operators, and tenders earn the highest entry-level wage, \$17.56/hour in the subregion².

Exhibit 2. Advanced Welding, Intermediate Welding, and Welding Essentials entry-level wages in the SCV/SML subregion



Job Postings

There were 304 job postings for the two occupations in the SCV/SML subregion from January 2022 to June 2022.³ The employers with the most job postings are listed in Exhibit 3.

Exhibit 3. Top employers of Advanced Welding, Intermediate Welding, and Welding Essentials by number of job postings

Employer	Job Postings	% Job Postings
Pacific Gas and Electric Company	6	7%
Oldcastle Precast Incorporated	5	6%
Baltimore Aircoil Company	4	5%
PCL Construction	4	5%
Bluescope Buildings North America	2	2%
Fresno Valves Castings Incorporated	2	2%
Grundfos Americas Corporation	2	2%
Grundfos Holding A/S	2	2%
Lazer Spot	2	2%
Oxnard Corporation	2	2%

Exhibit 4 shows how job postings for the targeted occupations in the SCV/SML subregion are distributed across three O*NET OnLine occupations. The occupational title Welders, Cutters, and Welder Fitters is listed in 301 job postings. Note how this occupational title dominates the job posting results. Common job titles in postings include Welder in 117 job postings, Welder/Fabricator in 26 job postings, and Mig Welder in 16 job postings.

² Entry-level wages are derived from the 25th percentile.

³ Other than occupation titles and job titles, the categories below can be counted one or multiple times per job posting, and across several areas in a single posting. For example, a skill can be counted in two different skill types, and an employer can indicate more than one education level.

Exhibit 4. Top occupational titles in job postings for Advanced Welding, Intermediate Welding, and Welding Essentials

Occupational Title	Job Postings	% of Job Postings
Welders, Cutters, and Welder Fitters	301	99%
Solderers and Brazers	2	1%
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	1	0%

Salaries

Exhibit 5 shows the “Market Salaries” for Advanced Welding, Intermediate Welding, and Welding Essentials occupations. These are calculated by Burning Glass using a machine learning model built off of millions of job postings every year. This accounts for adjustments based on locations, industry, skills, experience, education requirements, among other variables.

Exhibit 5. Salaries for Advanced Welding, Intermediate Welding, and Welding Essentials occupations

Market Salary Percentile	Salary Amount
10th Percentile	\$22,796
25th Percentile	\$29,070
50th Percentile	\$31,532
75th Percentile	\$35,710
90th Percentile	\$43,092

Education

Of the 304 job postings, 103 listed an education level preferred for the positions being filled. Among those, 96% requested high school or vocational training, 3% requested a bachelor’s degree, and 2% requested an associate degree (Exhibit 6). A job posting can indicate more than one education level. Hence, the percentages shown in the chart below may total more than 100%.

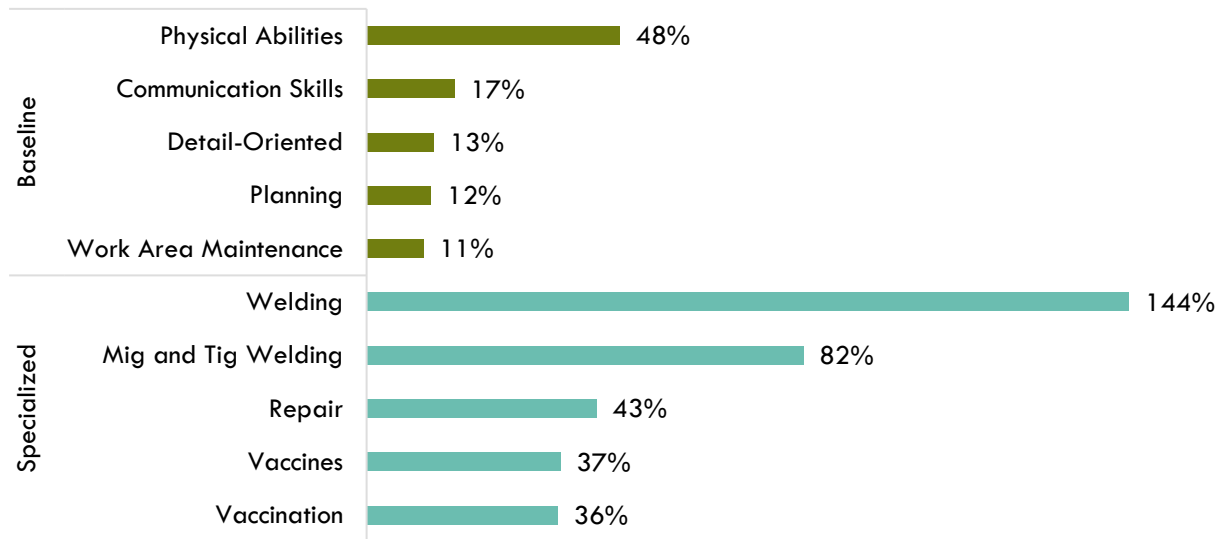
Exhibit 6. Education levels requested in job postings for Advanced Welding, Intermediate Welding, and Welding Essentials

Education Level	Job Postings	% of Job Postings
High school or vocational training	99	96%
Bachelor's degree	3	3%
Associate's degree	2	2%
Master's degree	2	2%

Baseline and Specialized Skills

Exhibit 7 depicts the top baseline and specialized skills for the targeted occupations. The three most important baseline skills are physical abilities, 48% of job postings, communication skills, 17%, and detail-oriented, 13%. The top three specialized skills are welding, 144% of job postings; mig and tig welding, 82%; and repair, 43%.

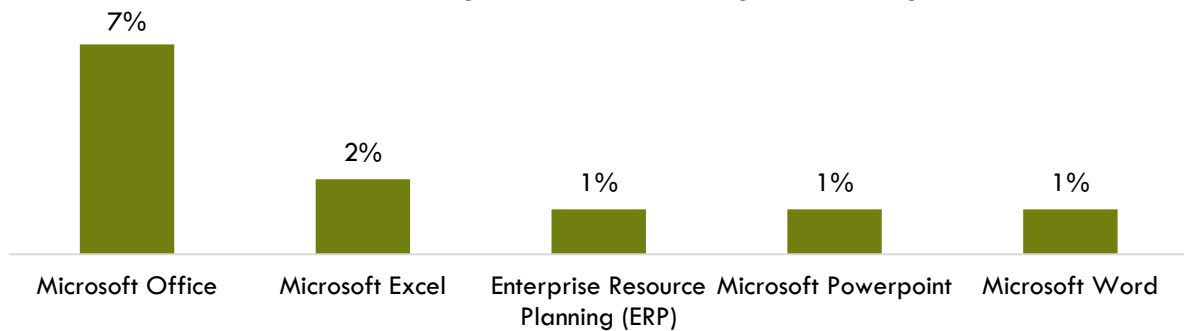
Exhibit 7. In-demand Advanced Welding, Intermediate Welding, and Welding Essentials baseline and specialized skills



Software Skills

Analysis also included the software skills most in demand by employers. Microsoft Office and Excel were the top two software skills identified in job postings (Exhibit 8).

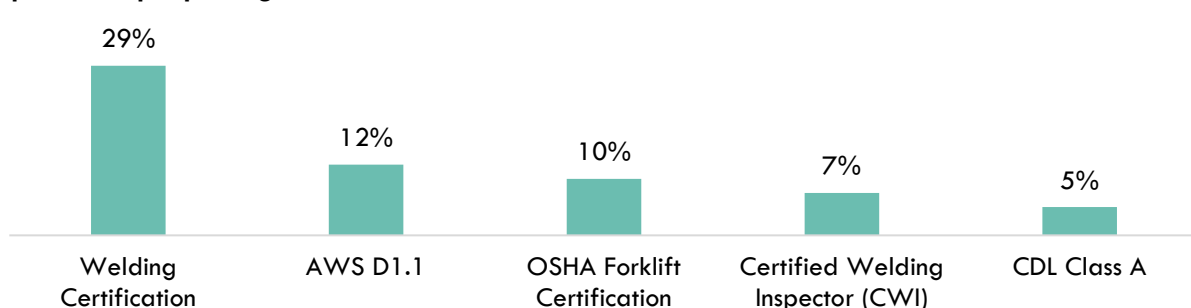
Exhibit 8. In-demand Advanced Welding, Intermediate Welding, and Welding Essentials software skills



Certifications

Of the 304 job postings, 41 contained certification data. Among those, 29% indicated a need for a welding certification. The next top certifications are AWS D1.1 and OSHA Forklift Certification (Exhibit 9). (Due to the low number of job postings with certifications listed, the chart below may not be representative of the full sample.)

Exhibit 9. Top Advanced Welding, Intermediate Welding, and Welding Essentials certifications requested in job postings



Education, Work Experience & Training

A high school diploma or equivalent is typically required for the two occupations (Exhibit 10).

Exhibit 10. Education, work experience, training, and Current Population Survey results for Advanced Welding, Intermediate Welding, and Welding Essentials occupations⁴

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Welders, Cutters, Solderers, and Brazers	High school diploma or equivalent	None	Moderate-term	32.2%
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	High school diploma or equivalent	None	Moderate-term	32.2%

⁴ "Labor Force Statistics from the Current Population Survey," Bureau of Labor Statistics, <https://www.bls.gov/cps/>.

Supply

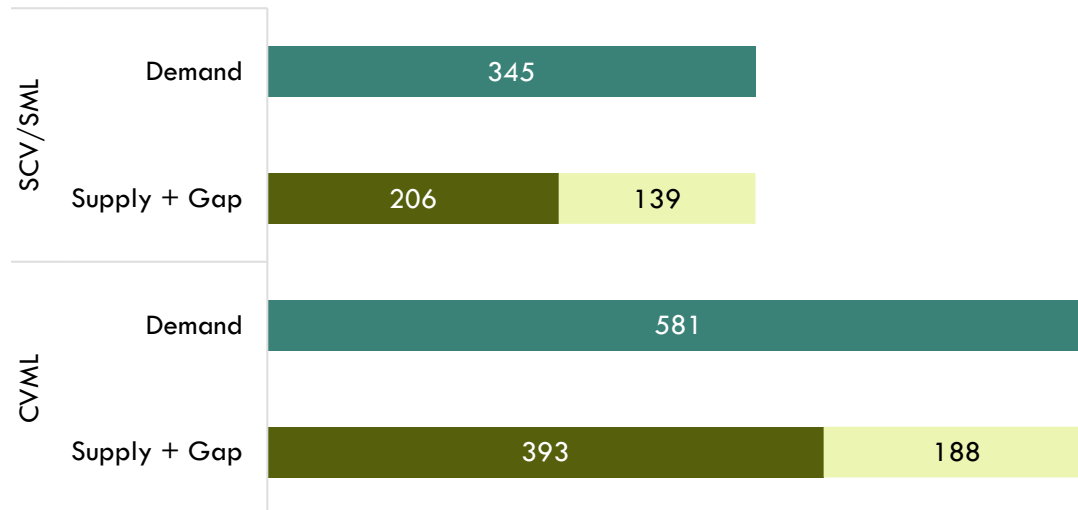
Analysis of program data from the Integrated Postsecondary Education Data System (IPEDS) included the TOP and CIP codes and titles: 095650 - Welding Technology and 48.0508 - Welding Technology/Welder. Analysis of the last three years of data shows that, on average, 393 awards were conferred in the Central Valley/Mother Lode region each year (Exhibit 11).

Exhibit 11. Postsecondary supply for Advanced Welding, Intermediate Welding, and Welding Essentials occupations in the region

TOP/CIP Code-Title	College	Associate Degree	Award < 1 Academic Year	Award 1 < 2 Academic Years	Certificate 12 < 18 Semester Units	Certificate 16 < 30 Semester Units	Certificate 18 < 30 Semester Units	Certificate 30 < 60 Semester Units	Certificate 6 < 18 Semester Units	Certificate 8 < 16 Semester Units	Subtotal
095650 - Welding Technology	Bakersfield	8						8	50		67
	Cerro Coso	6				3	14	10			33
	Columbia									1	1
	Fresno City	7			11	6		5			29
	Merced	4				2	5		41		53
	Modesto	4							11		15
	Porterville								10		10
	Reedley College	4				12	1	14			30
	San Joaquin Delta					2	15	9			26
	Sequoias	8				2	13				23
	Taft	1			3				2	1	7
	West Hills Coalinga					1	5				6
48.0508 - Welding Technology/Welder	Advanced Career Institute		89								89
	Institute of Technology			3							3
TOTAL		43	89	3	14	29	53	45	115	2	393

There is an undersupply of 139 Advanced Welding, Intermediate Welding, and Welding Essentials workers in the SCV/SML subregion and 188 workers in the region (Exhibit 12).

Exhibit 12. Advanced Welding, Intermediate Welding, and Welding Essentials workforce demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill gap in the SCV/SML subregion and region



Student Outcomes

Exhibit 13 summarizes employment and wage outcomes from the California Community College Chancellor’s Cal-PASS Plus LaunchBoard for the TOP code related to Advanced Welding, Intermediate Welding, and Welding Essentials. Of note, 80 welding technology students received a degree or certificate or attained apprenticeship journey status; 16 students transferred; 73% of students obtained a job closely related to their field of study; 29% had a median change in earnings; and 71% of students attained a living wage.

Exhibit 13. Regional metrics for the TOP code related to Advanced Welding, Intermediate Welding, and Welding Essentials

Metric	Welding Technology 095650
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	80
Number of Students Who Transferred	16
Job Closely Related to Field of Study	73%
Median Change in Earnings	29%
Attained a Living Wage	71%
* denotes data not available.	

Conclusion

The entry-level wages of the two occupations exceed the SCV/SML subregion's average living wage. There were 304 job postings in the past six months for occupations related to Advanced Welding, Intermediate Welding, and Welding Essentials in the subregion. Analysis of skills and certification requirements in job postings indicates:

- The top baseline skill is physical abilities, and the top specialized skill is welding.
- The top software skill is Microsoft Office.
- The top certification is a welding certification.

There is an undersupply of trained workers, a shortage of 139 in the SCV/SML subregion and 188 in the region.

Recommendation

Based on these findings, it is recommended that Reedley College work with the regional directors, the college's advisory board, and local industry in the expansion of programs to address the shortage of Advanced Welding, Intermediate Welding, and Welding Essentials workers in the region.

Appendix A: Methodology & Data Sources

Data Sources

Labor market and educational supply data compiled in this report derive from a variety of sources. Data were drawn from external sources, including the Economic Modeling Specialists, Inc., the California Community Colleges Chancellor's Office Management Information Systems Data Mart and the National Center for Educational Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS). Below is the summary of the data sources found in this study.

Data Type	Source
Labor Market Information/Population Estimates and Projections/Educational Attainment	Economic Modeling Specialists, Intl. (EMSI). EMSI occupational employment data are based on final EMSI industry data and final EMSI staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level EMSI earnings by industry: economicmodeling.com .
Typical Education Level and On-the-job Training	Bureau of Labor Statistics (BLS) uses a system to assign categories for entry-level education and typical on-the-job training to each occupation for which BLS publishes projections data: https://www.bls.gov/emp/tables/educational-attainment.htm .
Labor Force, Employment and Unemployment Estimates	California Employment Development Department, Labor Market Information Division: labormarketinfo.edd.ca.gov .
Job Posting and Skills Data	Burning Glass: burning-glass.com/ .
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database includes over 900 occupations as well as information on skills, abilities, knowledge, work activities and interests associated with specific occupations: onetonline.org .

Key Terms and Concepts

Annual Job Openings: Annual openings are calculated by dividing the number of years in the projection period by total job openings.

Education Attainment Level: The highest education attainment level of workers age 25 years or older.

Employment Estimate: The total number of workers currently employed.

Employment Projections: Projections of employment are calculated by a proprietary Economic Modeling Specialists, Intl. (EMSI) formula that includes historical employment and economic indicators along with national, state and local trends.

Living Wage: The cost of living in a specific community or region for one adult and no children. The cost increases with the addition of children.

Occupation: An occupation is a grouping of job titles that have a similar set of activities or tasks that employees perform.

Percent Change: Rate of growth or decline in the occupation for the projected period; this does not factor in replacement openings.

Replacements: Estimate of job openings resulting from workers retiring or otherwise permanently leaving an occupation. Workers entering an occupation often need training. These replacement needs, added to job openings due to growth, may be used to assess the minimum number of workers who will need to be trained for an occupation.

Total Job Openings (New + Replacements): Sum of projected growth (new jobs) and replacement needs. When an occupation is expected to lose jobs, or retain the current employment level, number of openings will equal replacements.

Typical Education Requirement: represents the typical education level most workers need to enter an occupation.

Typical On-The-Job Training: indicates the typical on-the-job training needed to attain competency in the skills needed in the occupation.